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# *Indian Standard*

## METHOD FOR SENSORY EVALUATION OF SWEETENED CONDENSED MILK

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

*Indian Standard*

# METHOD FOR SENSORY EVALUATION OF SWEETENED CONDENSED MILK

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# *Indian Standard*

## METHOD FOR SENSORY EVALUATION OF SWEETENED CONDENSED MILK

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 31 December 1981, after the draft finalized by the Sensory Evaluation Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Sweetened condensed milk commonly sold in tin cans is judged on the basis of its sensory characteristics, such as the appearance of the surface layer of the product, colour, body and texture and flavour. This standard specifies an acceptable procedure for sensory evaluation of sweetened condensed milk. It is expected that this will prove helpful to manufacturers and consumers for evaluating the product for its sensory properties on a rational basis.

**0.3** This standard is complementary to IS : 1166-1973\*.

**0.4** In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960†.

### 1. SCOPE

**1.1** This standard prescribes conditions, technique, method and evaluation card for the sensory evaluation of sweetened condensed milk.

### 2. TERMINOLOGY

**2.1** For the purpose of this standard, the following definitions in addition to those given in IS : 5126 ( Part I )-1969‡ and IS : 5126 ( Part II )-1969§ shall apply.

\*Specification for condensed milk (*first revision*).

†Rules for rounding off numerical values (*revised*).

‡Glossary of general terms for sensory evaluation of foods : Part I Methodology.

§Glossary of general terms for sensory evaluation of foods : Part II Quality characteristics.

## IS : 10029 - 1981

**2.1.1 Strong** — It is a flavour defect, which is suggestive of caramelized sugar and is usually accompanied by browner tint to the natural colour.

**2.1.2 Buttons-Lumpy** — It is a body defect which is characterized by the presence of round and firm lumps with stale odour at the surface of the product.

**2.1.3 Gassy** — Resulting from gas formation by yeast in the product, this defect is recognized by bloated or huffed can and a yeasty odour. Such products shall not be tasted.

**2.1.4 Sandy, Coarse Mealy** — A textural defect in which the product lacks smoothness and is felt, in the mouth. This is caused by the decrease in crystallization of lactose.

**2.1.5 Settled** — It is a defect when some solid deposits in the form of a layer on the bottom of the can.

**2.1.6 Thickened** — This is a body defect which is manifest by a gel formation.

**2.1.7 Fat Separation** — This defect occurs on the form of a fatty film on the bottom surface which is in contact with the product.

**2.1.8 Fruitiness** — Flavour defect of microbial origin.

## 3. GENERAL CONDITIONS

**3.1** The general conditions for sensory evaluation of sweetened condensed milk shall be as given in IS : 6273 ( Part I )-1971\*.

## 4. PANELISTS

**4.1 Selection of Panelists** — The guidelines for selection of panelists given in IS : 8140-1976† may be followed.

## 4.2 Training

**4.2.1 Preparation of Sweetened Condensed Milk Samples for Training** — A control sample of freshly prepared sweetened condensed milk representing

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\*Guide for sensory evaluation of foods : Part I Optimum requirements.

†Guide for selection of panel for sensory evaluation of foods and beverages.



all the desirable sensory characteristics should be served along with defects prepared as follows:

- a) *Metallic* — Prepare 0.5 percent solution of ferrous sulphate in distilled water. Add 1, 4 and 7 ml of the solution to 100 g fresh sweetened condensed milk and mix well to simulate varying degrees of metallic flavour in it.
- b) *Rancid* — Homogenize 30 percent fat cream obtained from raw milk, allow it to stay at about 37°C for about 1 hour before heating it to nearly 75°C and immediately cooling it to room temperature. Mix the cream with fresh sweetened condensed milk at the rate of 10, 20 and 50 percent to obtain varying degrees of rancidity in the product.
- c) *Strong, caramel* — Heat, in a boiling water bath, fresh sweetened condensed milk (70 to 80 g) to 85-90°C and leave it covered at about 90°C for 2½, 3½ and 4½ hours, before cooling to room temperature. This will also give varying degrees of browning in the product.
- d) *Tallowy* — Expose fresh sweetened condensed milk, containing approximately 5 mg/kg of ferric or cupric chloride to sunlight to varying periods such as 3, 6 and 9 hours.
- e) *Sandy, coarse, mealy* — Heat the fresh sample (about 200 g) in a beaker at about 70°C for 5 minutes and hold it undisturbed in an incubator at 30°C for 6, 12 and 18 hours to manipulate different degrees of sandiness in the product.
- f) *Settled* — Heat the sample as mentioned in (e) above and maintain in an incubator at 30°C for 24, 48 and 72 hours.
- g) *Thickened* — For developing varying degrees of the defect, heat a fresh sample of condensed milk in a water bath to 80°C. As an alternative for developing this defect packed commodities samples of tins can be stored at 37°C for a period varying between 30 to 90 days.

**4.2.2 Procedure for Training** — The panelists should be familiarized with all characteristics of fresh sweetened condensed milk prepared under ideal conditions. They should also be trained to detect and discriminate against likely defects in the product with respect to its colour, appearance, body, texture and flavour.

**4.2.2.1** A series of 20 judgements should be obtained from each prospective panelist for each defect with known differences at levels perceived as definite. To compensate for the known day to day variations, qualifying test should be given for a 3-day period. Those who make an acceptable score ( 75 percent correct ) should be selected.

## IS : 10029 - 1981

**4.3** The panelists shall be checked once every three months for their acuity and consistency.

**4.4 Number of Panelists** — Minimum of five persons should be employed. A minimum of 10 judgements may be taken using the panel.

## 5. SAMPLING, PREPARATION AND PRESENTATION

**5.1 Sampling** — A representative sample should be drawn from the lot to be examined ( *see* IS : 1166-1973\* ). Precautions should be exercised to avoid any extraneous contamination in drawing, handling and presenting the samples.

**5.2 Preparation of Samples** — The sample can should be placed on the table in the same position as it was prior to examination. While a small size can should be sufficient, the product after visual examination should be served to panelists in 25 g quantities in 50 ml beakers along with the cans present simultaneously, so the judges can see for setting and other defects.

Judge for flavour in the samples reconstituted as per directions on the can.

**5.3 Number of Samples** — The number of samples in a single session should not exceed 5. If the number of samples is more, then the evaluation should be done in different sessions with interval of 3 to 4 hours.

**5.4 Coding** — Coding of the samples should be done as recommended under 7.7 of IS : 6273 ( Part I )-1971†.

## 6. PROCEDURE FOR EVALUATIONS

**6.1 Technique of Evaluation** — Observe the appearance of the container before opening the can. Place the can on the table for examination in the same upright position in which it stood before examination so that it would enable the panelist to open the top and examine the contents at the surface and subsequently at the bottom. Pour out the can contents into a beaker while observing its consistency and later sediment at the bottom if any. Finally take a spoonful of the product into the mouth to examine it for its body and texture. Judge for flavour in the samples reconstituted as per directions on the label.

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\*Specification for condensed milk ( *first revision* ).

†Guide for sensory evaluation of foods : Part I Optimum requirements.

**6.2 Method** — Follow the composite scoring method as given in 4.2.8 of IS : 6273 (Part II)-1971\*.

**6.3 Evaluation Card** — Use the evaluation card given in Table 1 for recording observations. Indicate the sample score in the column provided for it after deducting the total defective score for each attribute.

**TABLE 1 EVALUATION CARD FOR SWEETENED CONDENSED MILK**

(Clauses 6.3 and 6.4)

Name ..... Date .....

Code No. .... Time .....

A) Score the sample for different characteristics. Indicate the degree of defects, if any, encircling the applicable one and deduct accordingly from the characteristic score.

CHARACTERISTIC	MAXIMUM SCORE	MINIMUM FOR EACH ATTRIBUTE	SAMPLE SCORE
(1)	(2)	(3)	(4)
i) Package appearance	5	3	
ii) Colour and appearance	15	9	
iii) Body and texture	35	21	
iv) Flavour	45	27	

NOTE — If the sample scores less than the minimum for any characteristic, it is to be rejected.

B) Degree of defects

CHARACTERISTIC	DEFECT	DEGREE OF DEFECT		
		Suspicion	Definite	Pronounced
(1)	(2)	(3)	(4)	(5)
i) Package appearance	Improper seal/ rust spot/soiled/ dull surface	1	2	3
	Browning	1	2	3
ii) Colour and appearance	Mould buttons	2	5	10
	Fat separation	1	3	5
iii) Body and texture	Thickened	2	10	16
	Sandy/coarse/ mealy heavy	2	5	10
iv) Flavour	Settled	1	2	3
	Caramelized	1	2	5
	Rancid/tallowy	2	4	8
	Metallic	2	5	10
	Fruitiness	2	5	10

\*Guide for sensory evaluation of foods : Part II Methods and evaluation cards.

## IS : 10029 - 1981

**6.4 Grading** — After computation of data, recorded in Table 1 by the panelists, the following grades should be awarded.

<i>Score</i>	<i>Grades</i>
90 and above	Excellent
80 — 89	Good
60 — 79	Fair
59 and below	Poor

## 6.5 Statistical Evaluation of Results

**6.5.1** For the purpose of statistical evaluation one of the methods mentioned under **4.2.8.4** of IS : 6273 ( Part II ) - 1971\* should be adopted.

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\*Guide for sensory evaluation of foods : Part II Methods and evaluation cards.